



Climate variations and Salmonella infection in Australian subtropical and tropical regions

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Abstract:

This study aims to quantify the relationship between climate variations and cases of Salmonella infection in subtropical and tropical areas in Australia. Brisbane in a subtropical area and Townsville in a tropical area of Queensland were selected as the study regions. Local meteorological variables and notified cases of Salmonella infection from January 1990 to July 2005 were provided by local authorities. Spearman correlation and time-series adjusted Poisson regression were applied controlling for autoregression, lag effects, seasonal variation and long-term trend. Natural cubic spline and Hockey Stick model were used to estimate a potential threshold temperature. Spearman correlation indicated that maximum and minimum temperatures, relative humidity at 9 am and 3 pm, and rainfall were all positively correlated with the number of cases in both Brisbane and Townsville, with the lag values of the effects up to 2 weeks in Brisbane and 2 months in Townsville. Only temperature and rainfall were significantly included in the regression models in both regions. The models suggested that a potential 1 °C rise in maximum or minimum temperature may cause a very similar increase in the number of cases in the two regions. No threshold for the effect of maximum or minimum temperature on Salmonella infection was detected in either region. The association between climate variations and Salmonella infection could be very similar in subtropical and tropical regions in Australia. Temperature and rainfall may be used as key meteorological predictors for the number of cases in both regions. © 2009 Elsevier B.V. All rights reserved.

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Resource Description

Early Warning System:

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Meteorological Factors, Precipitation, Temperature

Temperature: Fluctuations

Geographic Feature:

Climate Change and Human Health Literature Portal



resource focuses on specific type of geography

Tropical, Urban, Other Geographical Feature

Other Geographical Feature : subtropical

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Australasia

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease: Salmonellosis

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Short-Term (

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content